1773

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UNITED STATES PATENT AND TRADEMARK OFFICE

In re the application of	)	
	)	
GREFENSTEIN et al	)	Art Unit: 1773
	)	
Serial No. 09/987,775	)	Examiner: KRUER
	)	
Filing or 371(c) Date: December 9, 1997	)	
	)	

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Typed or printed name of person signing this certificate: Jason D. Voight

Signature: J. D. Voight

Honorable Commissioner for Patents
Alexandria, Virginia 22313-1450

STATUS INQUIRY

Applicants request a status report on this application. Applicants filed a Petition to Revive under 37 CFR 1.137(b) (copy enclosed) on July 26, 2004 and continue to await action thereon.

Please charge any shortage in fees due in connection with the filing of this paper to Deposit Account No. 14.1437.

Respectfully submitted,
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of	)		
	)		
GREFENSTEIN et al.	)		
	)		
Serial No. 08/987,775	)	Group Art Unit:	1773
	)		
Filed: December 09, 1997	)	Examiner:	Kruer
	)		

For: **LAMINATED SHEETS OR FILMS AND MOLDINGS THEREOF**

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, PO Box 1450, Alexandria, VA 22313-1450, on:
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July 23, 2004
Date of Signature

Honorable Comm'r. of Patents
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Alexandria, VA 22313-1450

PETITION TO REVIVE UNDER 37 CFR 1.137(b)

The above-mentioned application was held abandoned for failure to timely respond to the Office action of January 3, 2003.

Applicants hereby petition to revive this unintentionally abandoned application. The required response was previously filed on September 26, 2003 (certificate of mailing) (copy enclosed) in the form of a response and Declaration. A check for $1330 to cover the petition fee is enclosed. The entire delay in filing the required reply from the due date for the reply until the filing of a grantable petition was unintentional.

Please charge any shortage in fees due in connection with the filing of this paper to Deposit Account No. 11.0345. Please credit any excess fees to such deposit account.

07/27/2004 HALI11 00000023 08987775
01 FC:1453 1330.00 OP

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

GREFENSTEIN et al.

Serial No. 08/987,775

Filed: December 9, 1997

MAIL STOP RCE

Art Unit: 1773

Examiner: Kruer

For: LAMINATED SHEETS OR FILMS AND MOLDINGS THEREOF

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, PO Box 1450, Alexandria, VA 22313-1450, on:

SEPTEMBER 26, 2003
Date of Deposit

DAVID C. LIECHTY
Person Making Deposit

Signature

SEPTEMBER 26, 2003
Date of Signature

Honorable Comm'r. of Patents
PO Box 1450
Alexandria, VA 22313-1450

REQUEST FOR CONTINUED EXAMINATION
UNDER 37 CFR §1.114

Sir:

Further in response to the office action dated January 3, 2003, and further to the RCE and Petition to Suspend Action mailed on June 26, 2003, applicants respectfully request reconsideration of the rejections of record based on the following remarks and the accompanying Rule 132 affidavit.

REMARKS

REJECTION OF CLAIMS 24, 26, 30, 31, AND 41 UNDER 35 USC §103(A)

With reference to the examiner's rejection of claims 24, 26, 30, 31 and 41, applicants reiterate the essential points of arguments previously submitted.

Each of the present rejections are based on combinations of references disclosing ASA substrates and references disclosing PMMA/ABS-sheets. None of the references suggests replacing an ABS substrate with an ASA substrate. Even were such a suggestion present, there is no indication that such a change would lead to the advantageous properties presently achieved. As indicated in the specification, exchanging an ABS substrate for an ASA substrate increases the penetration energy (table 1), the low-temperature impact strength (table 2), and improves the elongation at break (table 3). These unexpected results support the unobviousness for using ASA substrate layers rather than ABS substrate layers in the laminated sheets or films.

The examiner further states that applicants have only set forward arguments against the references individually, whereas the examiner's rejections are based on combinations of these references (see p.7, last paragraph of the office action). Applicants do not share this view. In their most recent reply, applicants addressed combinations of the references, specifically pointing out that there is no incentive to combine the references with a reasonable expectation of success (see, e.g., p.11).

As applicants have set forward previously, the invention claimed in present claims 24, 26, 30, 31, and 41 is novel and unobvious over the cited prior art. Applicants

respectfully request that the rejections be withdrawn.

REJECTION OF CLAIM 43 UNDER 35 USC §102(A)

The examiner rejects claim 43 as obvious over Fischer et al. (US 5,747,568) or Rosenau et al. (US 5,821,302), each in view of Zabrocki et al. (US 5,306,548) or McDonagh (US 4,169,180). This rejection is respectfully traversed.

Both the Fischer and Rosenau references have been extensively discussed in applicants' previous replies, and in essence, each discloses an ASA molding composition. The examiner is correct that neither reference discloses applying a styrene-acrylonitrile copolymer layer on top of a substrate layer made from the composition therein.

Zabrocki relates to coextruded weatherable film structures and laminates. The coextruded weatherable film for lamination to an underlying non-weatherable substrate includes, for example, a two-layer film structure. The top layer may be a styrene/acrylonitrile copolymer (SAN) (see col. 3, line 47). However, rubber reinforced styrene/acrylonitrile copolymers like AES or ASA are preferred as a top layer. Furthermore, the composition of the top layer may be blended with, for example, PVC (see col. 3, lines 40-51).

The second layer functions as a layer which ties or bonds together the outer weatherable (top) layer to a layer substrate (see col. 4, lines 46-49). The coextruded thermoplastic second layer may include CPE, styrenic diblock or triblock polymers,

copolyamide adhesives, polyester adhesives, polyurethane adhesive, PVC and mixtures thereof (see col. 4, lines 55-59). There is no indication that the second layer may be an ASA copolymer or a styrene-acrylonitrile copolymer. The second layer, i.e., the tie layer may include UV-stabilizers or pigment material (see col. 5, lines 27-28 and 50-54).

Example 1 therein describes a top layer made of AES-ASA polymer blends. Thus, the top layer is a rubber-reinforced polymer blend. The second layer is a styrene-butadiene diblock polymer. This coextruded film was laminated onto high-impact polystyrene (HIPS) to provide a weatherable surface for the substrate (see col. 7, lines 25-47).

According to the present invention, however, the top layer is a styrene-acrylonitrile copolymer. This copolymer does not include a rubber component. The optional interlayer is also a styrene-acrylonitrile copolymer according to the present invention which is not rubber-reinforced. The substrate layer according to the present invention is an ASA copolymer which may include a polystyrene as component B and a particulate graft rubber based on acrylic acid esters as component A.

Thus, the laminated sheet or film according to the present invention differs from the Zabrocki reference in that the second layer is either the interlayer of a styrene-acrylonitrile copolymer or the ASA substrate layer. According to Zabrocki the second layer is composed of the polymers indicated in col. 4, lines 56-59. Neither styrene-acrylonitrile copolymers nor ASA copolymers are listed as the second (tie) layer of

Zabrocki.

According to example 1 of Zabrocki a HIPS polymer is used as a substrate layer. For the definition of HIPS the examiner makes reference to US 4,749,737 (van der Meer). In col. 5, lines 27-34, it is stated that high-impact polystyrenes (HIPS) are composed of polystyrene which is mixed with or grafted with natural or synthetic elastomers such as polybutadiene, styrene-butadiene, EPDM rubbers, acrylate rubbers and the like. However, particulate graft acrylate rubbers which contain the graft component A2 as defined in present claim 43 are not disclosed in this reference. Thus, from the references cited by the examiner it can not be concluded that the substrate layer, component A according to the present invention, falls under the definition of HIPS. Again, example 1 in col. 7 of Zabrocki discloses a second layer which is a styrene-butadiene diblock polymer (see col. 7, lines 34 to 35).

Neither Fischer nor Zabrocki suggests forming substrate layers of the Fischer polymer and top layers of a styrene-acrylonitrile copolymer and optionally an interlayer of a styrene-acrylonitrile copolymer. The Fischer reference does not disclose laminated sheets or films at all. The Zabrocki reference only discusses HIPS in example 1 with respect to the substrate layer. However, Zabrocki necessarily needs a second tie layer intimately adhered to the outer weatherable layer which functions as a layer which ties or bonds together the outer weatherable layer to a layer substrate (see Fig. 3 and col. 3, lines 8-11 and col. 4, lines 46-49 of Zabrocki).

Consequently, neither Fischer nor Zabrocki alone or in combination contains a

suggestion in the direction of providing a laminated sheet or film comprising an ASA substrate layer and a styrene-acrylonitrile copolymer (SAN) top layer and optionally between the top layer and the substrate layer, a coextruded interlayer of a styrene-acrylonitrile copolymer.

The examiner also cites US 4,169,180 (McDonagh) as an alternate to Zabrocki. The McDonagh reference relates to a resin laminate having a protective layer. The laminate is composed of a base layer and a protective top layer (see col. 1, lines 54-64). The base layer may be an ABS or HIPS copolymer (see col. 2, lines 5-6). The top layer is a copolymer composed of cross-linked (meth)acrylate, crosslinked styrene-acrylonitrile and uncrosslinked styrene-acrylonitrile. It may be prepared by emulsion polymerizing alkylacrylates, then grafting with styrene and acrylonitrile together with a crosslinker and finally polymerizing with styrene and acrylonitrile in the absence of crosslinking agents (see col. 2, lines 16-38). Thus, the top layer or protective layer comprises the crosslinked acrylates, crosslinked styrene-acrylonitrile and uncrosslinked styrene-acrylonitrile in the amounts given in col. 2, lines 38-45. Consequently, the top layer or protective layer is an ASA copolymer.

In column 3, lines 35 to 38 it is stated that the two layers may be bonded together by coextrusion.

Consequently, the McDonagh reference discloses a laminated sheet or film having an ASA top layer and an ABS or HIPS substrate layer, for example.

According to the present invention, however, a top layer of a styrene-acrylonitrile

copolymer is provided which is not an ASA copolymer. On the other hand, according to the present invention an ASA substrate layer is provided and not an ABS or HIPS substrate layer.

Neither the McDonagh reference nor the Fischer reference contain a suggestion in the direction of forming laminated sheets or films with the Fischer composition as substrate layer and the McDonagh films as top layers. Even if the person skilled in the art would consider a combination of the two, this combination would lead to an ASA top layer as disclosed by McDonagh. According to the present invention, however, no such ASA top layer is present, but a styrene-acrylonitrile copolymer top layer is employed.

Thus, even a combination of Fischer and McDonagh would not lead to the present laminated sheet or film as claimed in claim 43.

The same argument is true when the Fischer reference is exchanged with the Rosenau reference (US 5,821,302) which also has already been extensively discussed in our previous letters, see for example our letter of September 27, 2002, page 7.

The same arguments as forwarded above with respect to the combination of Fischer with Zabrocki or McDonagh are true for the combination of Rosenau with Zabrocki or McDonagh. Thus, we do not repeat the comments here.

NUMBER OF LAYERS IN EXAMPLES

The examiner argues that the inventive examples in tables 1 to 3 each contain three layers, and yet the claims only require two layers to be present. This is not true. Table 2 describes a PMMA/component (1) two-layer structure in the second to last line.

Component (1) corresponds to the ASA substrate layer. As is immediately evident from comparison with the PMMA/ABS two-layer structure, the penetration energy is markedly higher when the ASA substrate layer is employed instead of the ABS substrate layer (see the last two lines in table 2). Furthermore, table 5 describes a two-layer structure made of PMMA and component (1), (see the second line on page 38). Thus, the inventive examples in tables 1 and 3 include both two layer and three layer structures. Table 4 discloses a PMMA/ASA two-layer structure according to the present invention (see the third line of table 4).

SCOPE OF NON-OBVIOUSNESS

The examiner additionally argues that the objective evidence of non-obviousness is not commensurate in scope with the claims which the evidence is offered to support.

We enclose additional examples 1 to 4 and corresponding comparative examples V1 and V2 which further illustrate the present invention, found in the Rule 132 affidavit (the original of which will be submitted directly). With regard to the examples contained in the present application and the additional examples now presented we submit that the objective evidence of non-obviousness is commensurate in scope with the claims.

The enclosed additional examples relate to two-and three layer sheets containing ASA or ASA+PC in the substrate layer. The top layer is PMMA or SAN. Thus, the examples reflect the whole breadth of the layers as presently claimed.

From the results listed in the table it is evident that the gloss after car was

treatment and after weathering is significantly higher for the sheets according to the present invention. Furthermore, the color difference after weathering is much smaller for the compositions according to the present invention. This is astonishing since in examples 2 and V2 a colored inter layer is present which already absorbs light. Thus, when using the two- or three-layer structures according to the present invention including ASA or ASA+PC as a substrate layer, there are less color differences and a higher gloss after weathering when compared to comparative sheets having ABS or ABS+PC substrate layers. By employing SAN as a top layer instead of PMMA, the gloss before and after weathering as well as the chemical resistance could be further improved.

Some results were obtained when the substrate layer contained 5% by weight of titanium dioxide as component D.

Consequently, the results presented in the enclosure support the non-obviousness and advantageous properties of the sheets according to the present invention.

Furthermore, in the last reply, applicants included further experimental results, which are now established by the Rule 132 affidavit (see pp. 2-3 therein).

In the first laminated sheet, a SAN top layer was combined with an ASA substrate layer. In a second laminated sheet, a SAN top layer was combined with a colored SAN interlayer and an ASA substrate layer. The gloss of the laminated sheets or films was compared with corresponding laminated sheets or films having PMMA top

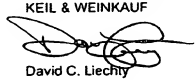
layer. Furthermore, the sheets were also investigated with respect to scratch resistance in an AMTEC-Kistler test. In this test the test moldings are treated with a brush and an aqueous washing detergent mixture containing sand. The gloss is determined before and after the treatment.

Thus, for the last laminated sheets or films according to claim 43 experimental results and advantages were also supported by experimental results for the two-layer structure and three-layer structure, respectively.

In view of the foregoing amendments and remarks, applicants consider that the rejections of record have been obviated and respectfully solicit passage of the application to issue.

Please charge any shortage in fees due in connection with the filing of this paper, including Extension of Time fees to Deposit Account No. 11-0345. Please credit any excess fees to such deposit account.

Respectfully submitted,
KEIL & WEINKAUF



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DCL/kas

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

re Application of	)	
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GREFENSTEIN et al.	)	Art Unit: 1773
	)	
Serial No. 08/987,775	)	Examiner: Kruer
	)	
Filed: December 9, 1997	)	
	)	
For: LAMINATED SHEETS OR FILMS AND MOLDINGS THEREOF		

Honorable Comm'r. of Patents
PO Box 1450
Alexandria, VA 22313-1450

DECLARATION UNDER 37 CFR § 1.132

I, Achim Grefensteln, Dr., a citizen of the Federal Republic of Germany and residing at D-67122 Altrip, Germany, declare as follows:

I hold a Ph.D. degree in Mechanical Engineering from the University of Aachen which was awarded in 1994. I am employed by BASF Aktiengesellschaft of 67056 Ludwigshafen, Germany. In total, I have approximately 10 years experience in work relating to thermoplastic molding compositions and films and (co)extrusion thereof. Therefore, I am familiar with the field to which the subject application relates. I am also familiar with the examiner's rejections of the claims of the subject application.

In the present Declaration, I state the results of Gloss and Scratch Resistant Testing of Laminated Sheets as attached in the Appendix A.

Furthermore, during the course of the experimentation it was found that a top layer of styrene-acrylonitrile co-polymer leads to a high gloss and a high scratch resistance of the laminated sheets or films. This was found by carrying out the following experiment:

The first laminated sheet or film consisted of 950 µm ASA which was colored and 50 µm SAN top layer. A second laminated sheet or film consisted of 750 µm ASA which was colored, an inter layer of 200 µm SAN which was colored with effect colorants, and 50 µm SAN top layer.

These products could be co-extruded to laminated sheets or films at a temperature of 230°C without any problems. The gloss of these laminated sheets or films was significantly higher even than a corresponding laminated sheet or film having a PMMA top layer. The gloss at 20° was 99 for the laminated sheet or film containing the SAN top layer, whereas for a PMMA top layer the value was only 79. For an angle of 60° the gloss was 100 for the SAN top layer and only 87 for the PMMA top layer.

The sheets were tested with the AMTEC-Kistler-test which is usually employed in the automobile industry. This is carried out by treating black test moldings ten times with a brush and an aqueous washing detergent mixture containing 1.5 g/L sand. The gloss was determined before and after the treatment under an angle of 20°. Before the treatment, the gloss for the sheet or film with a SAN top layer was 99, whereas the sheet with a PMMA top layer was only 79. After the treatment according to the AMTEC-Kistler-test the gloss was ~~34~~ 31-39 for the SAN top layer and only ~~8~~ 1-11 for the PMMA top

layer.

Thus, the additionally claimed laminated sheets or films containing the SAN top layer show an improved gloss and scratch resistance even when compared with the PMMA top layer. These laminated sheets or films containing the SAN top layer are not disclosed in any of the prior art references. Consequently, we hold the view that the claim directed to these laminated sheets or films is novel and inventive over the prior art references.

Signed at 67056 Ludwigshafen, Germany, this 9th day of Sep., 2003

Appendix A- Declaration of Dr. Grefenstein Serial No. 08/987,775

Examples of Red Sheets	**V1**	**V2**	**1**	**2**	**3**	
Top layer 50μm	PMMA	PMMA	PMMA	PMMA	SAN	SAN
Middle layer 200μm		PMMA		PMMA		SAN
Substrate layer 750 to 950μm	ABS	ABS+PC	ASA	ASA+PC	ASA+PC	ASA + PC
Extrusion temperature [°C]	235-250	230-255	238-258	240-260	238-257	240-255
Starting gloss 20°	79	80	79	80	100	101
Remaining gloss after car-washplant simulation	10	9	11	9	38	39
Colour difference dE after 1500 h	10,1	6,1	2,6	2,8	2,5	2,4
Gloss after weathering 1500 h	69	61	77	76	100	99
Color difference dE after weathering 3000h	12.3	8.1	4	5.2	3.8	3.9
Gloss after weathering 3000h	71	59	75	75	90	93
Resistance against pankreatin up to [°C]	36	38	40	36	69	67

Gloss measurement according to DIN67530
Car-wash plant simulation according to DIN55668
Weathering according to Iso4892-2, process A

Color difference diffuse 8° according to DIN53236
Resistance against Pankreatin according to DC-test PBODC 371

	Trade name	Producer
PMMA top layer	Lucryl	Formerly BASF
PMMA inter layer	Lucryl	Formerly BASF
San	Luran	BASF
ABS	Terluran	BASF
ASA	Luran S	BASF
ABS+PC	Bayblend	Bayer
ASA+PC	Luran S	BASF

Same results were obtained when the substrate layer contained ~~6~~ 8% by weight of ~~quartz flour.~~ titan dioxide